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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,688	08/25/2003	Kyo Young Chung	YBST-0002P2	9966
34610	7590	12/01/2004	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			NGUYEN, VINCENT Q	
			ART UNIT	PAPER NUMBER
			2858	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/646,688	<b>Applicant(s)</b> CHUNG, KYO YOUNG	
	<b>Examiner</b> Vincent Q Nguyen	<b>Art Unit</b> 2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on response 11/03/2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 16, 17, 22-24 and 27-48 is/are rejected.
- 7) ☒ Claim(s) 13-15, 18-21, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 9-12, 16, 17, 22-24, 27-36, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichioka et al. (5,546,013).

Regarding claims 1, 2, 22-24, 27-34, Ichioka et al. discloses a method comprising the step of (Figures 1, 11) applying a test signal (through cable 4) to a circuit (12); obtaining a signal generated in response to the test signal (through cable 32); comparing the response signal to reference information (Column 6, lines 39-43; classifying a defect in the circuit based on a result of the comparing step (column 6, lines 39-40); and identifying a problem which caused the defect based on said defect classification (Column 2, lines 40-47).

The only difference between the Ichioka et al. and the invention claimed is that the claim recites the step of identifying a problem in a manufacturing process while Ichioka et al. is silent.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of identifying a problem in a manufacturing process into the system of Ichioka et al. because identifying a problem in manufacturing or elsewhere does not require the system of Ichioka et al. to change its function.

Regarding claim 9, Ichioka et al. does not disclose the manufacturing as discussed in claim 1 above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjusting process to avoid problem when defected device is identified other wise the process of identifying the defected circuit become useless or redundant.

Regarding claims 10, 16, 17, 35, 36, Ichioka et al. discloses the reference information includes a plurality of signal profiles corresponding to different types of defects (short or open circuit) (Step 224).

Regarding claims 11, 12, Ichioka et al. discloses the step of determining that a signal profile which closely matches the response signal and determining that the circuit includes the defect corresponding to the signal profiles (Figure 12, 202-224).

3. Claims 2-8, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichioka et al. (5,546,013) in view of Suzuki et al. (5,377,030).

Regarding claims 2-4, 6-8, Ichioka et al. does not disclose the reference information includes a signal profile of a type of defect.

Suzuki et al. discloses a system similar to that of Ichioka et al. and further discloses the reference information (Suzuki et al.'s column 15, lines 50-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the reference information as taught by Suzuki et al.

into the system of Ichioka et al. because storing a defect data or a good data as reference for comparison in testing or identifying the defect is a routine in testing.

Regarding claim 5, the only difference between Ichioka et al. and the invention claimed is that the claim recites the step of computing a mean of signal values for a non-defective circuit in place of calculating and storing data as odd or even (Step 120) (Figure 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of computing the mean of signal value into the system of Ichioka et al. because depending on how the stored information will be processed, the mean value, or the odd and even number for a comparison does not require the system to change its function.

4. Claims 37-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichioka et al. (5,546,013) in view of Takagi et al. (5,801,965).

Regarding claims 37, 39-41, 43-45, 47, 48, Ichioka et al. does not disclose the step of comparing the defect classification to statistical information which links a plurality of predefined defect classifications to a plurality of corresponding manufacturing process problems.

Takagi et al. discloses a system similar to that of Ichioka et al. and further discloses a step of comparing the defect classification to statistical information which links a plurality of predefined defect classifications to a plurality of corresponding

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manufacturing process problems (Takagi et al.'s column 21, lines 23-38) for the purpose of enhancing the correction in manufacturing (Takagi et al.'s column 2, lines 57-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of comparing the defect classification to statistical information as taught by Takagi et al. into the system of Ichioka et al. because comparing the defect classification to statistical information which links a plurality of predefined defect classifications is routine in semiconductor manufacturing.

Regarding claim 38, 42, 46, Ichioka et al. does not disclose the step of determining in what stage of the manufacturing process the defect occurred.

Takagi et al. discloses a system similar to that of Ichioka et al. and further discloses a step of determining in what stage of the manufacturing process the defect occurred (Takagi et al.'s column 3, lines 11-19; column 8, lines 1-7; column 20, lines 13-21) for the purpose of correcting manufacture defect.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of determining in what stage of the manufacturing process the defect occurred as taught by Takagi et al. into the system of Ichioka et al. for the same reason as set forth in claim 37.

#### ***Allowable Subject Matter***

5. Claims 13-15, 18-21, 25, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

6. Applicant's arguments filed 11/03/2004 have been fully considered but they are not persuasive.

In response to Applicant's argument that:

"Claim 1 recites identifying a problem in a manufacturing process which caused the defect based on said defect classification. As acknowledged by the Examiner on page 2 of the Office Action, the Ichioka patent does not disclose this identifying step. Therefore, as a matter of law the Ichioka patent cannot render claim 1 obvious."

It is respectfully reminded that:

"The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (setting forth test for implicit teachings); In re Eli Lilly & Co., 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) (discussion of reliance on legal precedent); In re Nilssen, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) (references do not have to explicitly suggest combining teachings); Ex parte Clapp, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985) (examiner must present convincing line of reasoning supporting rejection); and Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993) (reliance on logic and sound scientific reasoning)." MPEP 2144.

The step of "identifying a problem in a manufacturing process which causes the defect based on defect classification" does not have to be expressly stated in the prior art because it is logically to identify a problem which causes the defect after the step of classifying a defect in the circuit (e.g. Ichioka et al. column 1. lines 65-67; column 2, lines 27-47; see also the abstract). For example, by looking at the parameters (Ichioka et al.'s figures 6-9, 12), one can determine which caused the defect not only on the manufacture process but also the entire service life of the device.

In response to Applicant's argument that: "Claims 2-8 depend from claim 1. In order to render claims 2-8 obvious, the Suzuki patent must therefore teach or suggest the features of claim 1 missing from Ichioka. The Suzuki patent discloses a decision circuit that detects pixel faults based on the voltage stored in a capacitor. The Suzuki patent does not teach or suggest the step of identifying a problem in a manufacturing process which caused the defect based on said defect classification."

As the examiner previously discussed above, the step of "identifying a problem in a manufacturing process which causes the defect based on defect classification" does not have to be expressly stated in the prior art because it is logically to identify a problem which causes the defect after the step of classifying a defect in the circuit

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

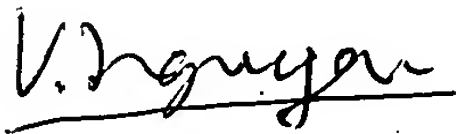
***Contact Information***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Q Nguyen whose telephone number is (571) 272-2234. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (571) 272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Vincent Q. Nguyen  
Primary Examiner  
Art Unit 2858

October 15, 2004